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| Name: | Date: |
| Course/Subject: Keystone Algebra II | Team: Math Department |
| Topic: III Non-Linear Equations | School District: Blue Mountain |

Key Learning: Solving and analyzing non-linear equations.

Unit Essential Question: How do we solve and graph non-linear equations?

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| Concept: Quadratic equations - terminology | Concept: Writing quadratic equations | Concept: Solving quadratic equations |
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| Lesson Essential Questions:   * What is the difference between linear and non-linear equations? * Why is there a difference in the number of solutions between linear and non-linear equations? (ET) | Lesson Essential Questions:   * When given various types of information, how do we write a quadratic equation? (ET) | Lesson Essential Questions:   * What are the different methods of solving quadratic equations? * How can we apply the different methods of solving quadratic equations? * How do we determine the best method to solve quadratic equations? * How is the quadratic formula derived? (ET) |
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| Vocabulary:   * quadratic function * coefficient * quadratic term * linear term * constant term | Vocabulary:   * roots/zeros * vertex | Vocabulary:   * factoring * complete the square * quadratic formula * quadratic substitution |
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| Additional Information/Resources: We will be using the graphing calculator to explore various functions and expression. | | |

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| Concept: Graph quadratic equations. | Concept: Solve radical exponential equations. | Concept: Solve logarithmic equations. | Concept: Problem solving with radical, exponential, and logarithmic expressions. | Concept: |
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| Lesson Essential Questions:   * How do we graph quadratic equations? * Compare and Contrast: graphically, what is the difference between linear and quadratic equations? (ET) | Lesson Essential Questions:   * How do we apply the properties of radicals and exponents to solve equations? * Why is it necessary to check all solutions to these equations? (ET) | Lesson Essential Questions:   * How do we solve logarithmic equations? * What is the relationship between logarithmic equations and exponential equations? (ET) | Lesson Essential Questions:   * How do we apply previously learned concepts to solve various real-world problems? (ET) | Lesson Essential Questions: |
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| Vocabulary:   * parabola * vertex * roots/zeros * x intercept * y intercept * standard form * axis of symmetry | Vocabulary:   * extraneous solutions | Vocabulary:   * natural logarithm * base 10 * properties of logs | Vocabulary:   * exponential decay * population * half-life | Vocabulary: |